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Identifying the Megatrends Shaping the T&D Industry

WHITE PAPER

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Investment in the electric transmission and distribution industry is booming. This boom is supported by four fundamentals: the need to maintain system reliability, the need to deliver generation to load, the need for environmental and regulatory compliance, and the need to replace T&D assets that have reached the end of useful life.

Notwithstanding this boom, the nation lacks a cogent energy policy to guide the investment that has occurred and will occur in years to come. Therefore, in an attempt to shape a national energy policy as it relates to electric transmission and distribution, it would be helpful to identify the megatrends that are shaping our industry.

There is no “uncertainty” about a megatrend. Megatrends are driven by demographics and technology. Megatrends are immutable. There are five megatrends in the electric transmission and distribution industry: grid modernization, energy storage, maximum use of existing transmission rights-of-way, distributed energy resources (DER) and operational efficiency.

Grid modernization, often called Smart Grid, is here to stay. The definition of the Smart Grid is the convergence of information and operational technology on the electric grid allowing sustainable options to customers and improved security, reliability and efficiency to utilities.

Old, conservative and typically late adopting utility models will be challenged as utilities integrate smart solution sets that move at the speed of Moore’s Law.

Energy storage is a fundamental challenge to our industry. Large-scale batteries and community energy storage offer many advantages at price points that will come down with economies of scale. Moving from an industry that produces a product (energy) as needed to one that can store capacity will be facilitated by two other megatrends: grid optimization and DER.

Maximum use of existing transmission rights-of-way will be forced upon our industry by project opponents that reasonably ask the question “why not?” Advances and worldwide applications of EHV underground, composite core conductors and energized line construction will make better use of existing rights-of-way a logical economic and environmental choice for the future. More capacity can be achieved with less right-of way.

Distributed energy resources (DER) or on-site generation will not replace central plants but will significantly impact the distribution grid. Small combustion turbines, combined heat and power (CHP) facilities, small compact nuclear units, backup generators and maybe solar and plug-in hybrid electric vehicle (PHEV) batteries will be distributed around the system based on fuel pricing and availability. DER will enhance the grid but make its safe and reliable operation increasingly complex. Regardless, the economics of fuel, the cost to site new larger generation or lines, and the retirement of many urban generation units all contribute to this megatrend.

Operational efficiency will be fundamentally important to utilities that have increasing pressure on rates. State utility regulators are not in the mood to raise utility rates in an uncertain economy, leaving utilities to improve operational efficiency in order to maintain shareholder value. Grid modernization will provide vast amounts of data for intelligent analysis and improved asset management decisions leading to better operational efficiency. Demand side (consumer) programs will be a part of this improved efficiency.

Megatrends are driven by demographics and technology, and they are immutable. Megatrends will define the future of our industry. Are you preparing for this future?

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